
Project Number: 09166-10

Prepared for:

Fountain People, Inc.
P.O. Box 807
San Marcos, Texas 78667

By
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December 2008

CERTIFICATION
Electromagnetic Interference Test Report
Fountain People, Inc.
Wireless Activator

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THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF PROFESSIONAL TESTING (EMI), INC.



Certificate Of Compliance

Applicant: Fountain People, Inc.

Applicant's Address: P.O. Box 807
San Marcos, TX 78667

FCC ID: WIM0000010

IC: 7978A-0000010

Project Number: 09166-10

Test Date: December 12, 2008

I, Jason Anderson, Director of Testing Services for Professional Testing (EMI), Inc., being familiar with the FCC and IC rules and test procedures have reviewed the test setup, measured data and this report. I believe them to be true and accurate.

The **Fountain People, Inc., Wireless Activator** was tested to and found to be in compliance with FCC 15.249 and RSS-210 A2.9.

The highest emissions generated by the above equipment are listed below:

	<u>Frequency (MHz)</u>	<u>Level (dBμV/m)</u>	<u>Limit (dBμV/m)</u>	<u>Margin (dB)</u>
Fundamental	915	93.4	94.0	-0.6
Harmonics	1830	61.5	63.5	-2.0
Occupied Bandwidth	640.6 kHz (20 dB)	647.5 kHz (26 dB)		

Jason Anderson
Director of Testing Services

This report has been reviewed and accepted by Fountain People, Inc. The undersigned is responsible for ensuring that **Fountain People, Inc., Wireless Activator** will continue to comply with the FCC and IC rules.

1.0 Introduction

1.1 Scope

Testing performed on the Fountain People, Inc. Wireless Activator is to support a modular approval for an intentional radiator operating in the United States and Canada under FCC and IC rules respectively. All exhibits including this test report should be used to support the claim of compliance to the appropriate standards shown below.

1.2 EUT Description

The Fountain People, Inc. Wireless Activator is part of a system used to remotely control water features in a water park or playground. In operation, the Wireless Activator is mounted in either ground based housing or in a bollard. Striking the surface of the housing activates the vibration sensor, wakes up the microcontroller and causes the device to transmit its identity code to the Wireless Receiver. It then waits for an acknowledgement and goes back to sleep. The device transmits in the ISM band at 915 MHz. The device employs frequency shift keying to transmit and receive binary data from remote devices. The system tested consisted of the following:

Manufacturer & Model	FCC ID	IC Number	Description
Fountain People, Inc., Wireless Activator	WIM0000010	7978A-0000010	Wireless Activator

1.3 Applicable Documents

Document	Title	Release
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment.	2003
47 CFR	Part 15 – Radio Frequency Devices Subpart C -Intentional Radiators	

1.4 Applicable Rules

Guidelines	FCC Rules, Part 15	IC Rules	
		RSS-GEN Issue 1	RSS-210 Issue 7
Transmitter Characteristics	15.249	4.1, 4.2, 4.4, 4.9	A2.9
Spurious Radiated Power*	15.205, 15.209, 15.249	4.2, 4.7	A2.9, 2.7 Table 2
Powerline Conducted Limit	15.207	4.2, 4.7, 7.2.2	
Antenna Requirement	15.203	7.1, 7.1.4	

1.5 EUT Operation

The EUT was operated in continuous transmit mode at max power fsk modulated with a worst case bit pattern to measure fundamental, harmonics, and spurious radiation. The EUT was tested in the absence of any enclosure to support a modular approval in which the device can be operated from any enclosure.

2.0 Electromagnetic Emissions Testing

Measurements were made at the PTI semi-anechoic facility designated Site 45 (FCC 459644, IC 3036B-1) in Austin, Texas. This site is registered with the FCC under Section 2.948 and Industry Canada per RS-212 and is subsequently confirmed by laboratory accreditation (NVLAP). The test site is located at 11400 Burnett Rd., Austin, Texas, 78758 while the main office is located at 1601 N. A.W. Grimes Blvd., Suite B, Round Rock, Texas, 78665. Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates and expressions thereof for EMC testing. The procedure of ANSI C63.4:2003 were utilized for making all emissions measurements.

2.1 Radiated Emissions Measurements

2.1.1 Test Procedure

Radiated emission measurements were made of the Fundamental and Spurious Emission levels for the EUT. The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable which allows 360 degree rotation. For measurements of the fundamental signal, a measurement antenna was positioned at a distance of 3 meters as measured from the closest point of the EUT. The radiated emissions were maximized by rotating the EUT. The fundamental emissions of the device were measured with the antenna of the device in three orthogonal axes.

A pre scan was performed at 10 meters to determine the overall emissions profile emanating from the EUT. Final measurements were taken at 3 meters for compliance with the emission limits.

A Spectrum Analyzer with peak detection was used to find the maximums of the radiated emissions during the variability testing. A drawing showing the test setup is given as Figure 1.

2.1.2 Test Criteria

The table below shows FCC radiated limits for an intentional radiator operating under the provisions of part 15.249. The measurement of the harmonics was performed to 10 GHz. The reference distance for each limit is also shown in this table.

Frequency MHz	Test Distance (Meters)	Field Strength (dBuV/m)@Test Distance
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
960 and above	3	54
Fundamental	3	94
Harmonics	1	63.5

Note: Fundamental Limit is expressed in Quasi Peak field strengths. Harmonics are expressed as Average limits. The spurious limits are expressed in Quasi-Peak.

2.1.3 Test Results

The radiated test data for the fundamental is included in Appendix A. Peak detection was used during the test for the fundamental and harmonics. Quasi-Peak detection was used for spurious emissions below 1 GHz. The radiated emission test data is included in Appendix A. The radiated emissions generated by the Wireless Activator are below the FCC and IC limits.

3.0 Occupied Bandwidth Measurement

3.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the floor. The occupied bandwidth was based on a 20 dB and 26 dB criteria (20 dB and 26 dB down either side of the emission from the peak emission). A drawing showing the test setup is given as Figure 1.

3.2 Test Criteria

According to FCC Part 15.249, the emission must remain in the defined band.

3.3 Test Results

The occupied bandwidth test data is included in Appendix A. The maximum occupied bandwidth for the fundamental frequency 915 MHz is 640.6 kHz (20 dB) and 647.5 kHz (26 dB). This occupied bandwidth complies with the FCC and IC requirement.

4.0 Antenna Requirement

An analysis of the Wireless Activator was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

4.1 Evaluation Procedure

The structure and application of the Wireless Activator was analyzed with respect to the rules. The antenna is an internal antenna, and is not accessible to the user. An auxiliary antenna port is not present.

4.2 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

- (a) Antenna must be permanently attached to the unit.
- (b) Antenna must use a unique type of connector to attach to the EUT.
- (c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

4.3 Evaluation Results

The Wireless Activator meets the criteria of this rule by virtue of having an internal antenna inaccessible to the user. The EUT is therefore compliant.

5.0 Modifications to Equipment

No modifications were made to the EUT.

6.0 List of Test Equipment

A list of the test equipment utilized to perform the testing is given below. The date of calibration is given for each.

Conducted Test Equipment

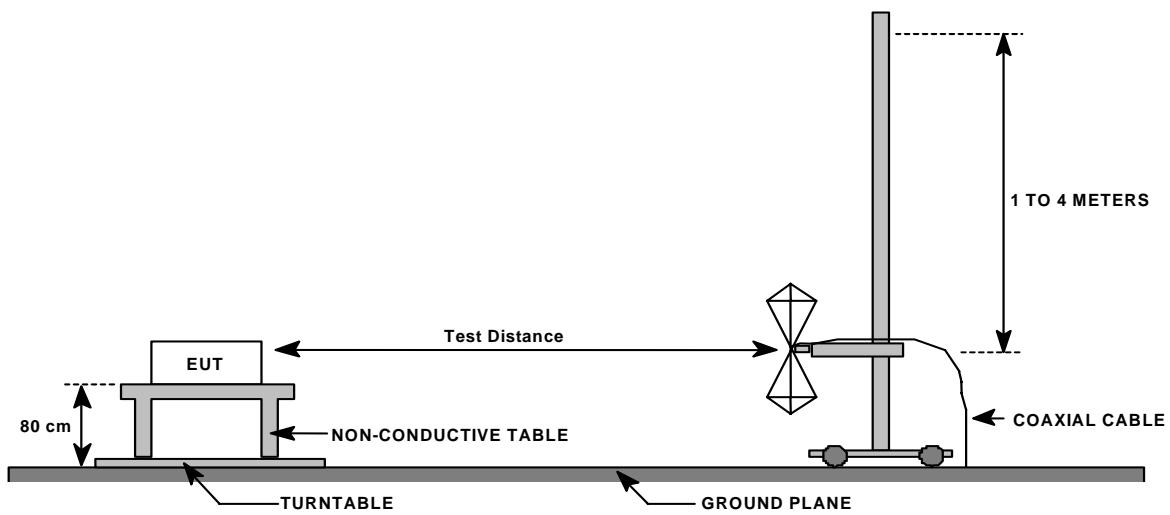
Asset #	Manufacturer	Model #	Description	Calibration Due
0939	HP	85650A	Quasi-peak Adapter	July 7, 2009
1629	HP	85662A	Spectrum Analyzer Display	NCR
1145	HP	8568B	Spectrum Analyzer	July 7, 2009
1086	PTI	PTI-ALF2	Attenuator, Limiter, Filter	March 26, 2009
1185	Emco	3825/2	Line Impedance Stabilization Network	September 13, 2009
81	ELGAR	1751SL	AC Power Supply	NCR
1173	PTI	100KHz HPF	High Pass Filter	March 26, 2009

Radiated Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
0275	HP	85650A	Quasi-peak Adapter (high band)	July 03, 2009
1273	HP	85662A	Spectrum Analyzer Display (high band)	NCR
84	HP	8566B	Spectrum Analyzer (high band)	March 14, 2009
0990	HP	85685A	RF Preselector (high band)	March 18, 2009
1239	HP	85650A	Quasi-peak Adapter (low band)	January 22, 2009
1274	HP	85662A	Spectrum Analyzer Display (low band)	NCR
1270	HP	8568B	Spectrum Analyzer (low band)	January 22, 2009
1035	HP	85685A	RF Preselector (low band)	January 22, 2009
1453	HP	8447D	RF Preamplifier	June 23, 2009
1389	Emco	3108	Biconical Antenna	April 16, 2009
1486	Emco	3147	Log Periodic Dipole Array Antenna	April 16, 2009
C026	none	none	Coaxial Cable (low band)	July 02, 2009
C027	none	none	Coaxial Cable (high band)	July 02, 2009

Asset #	Manufacturer	Model #	Description	Calibration Due
0582	EMCO	3115	Ridge Guide Antenna	September 30, 2009
1529	Miteq	Antenna Mounted	Microwave Preamplifier (preamp 1)	June 30, 2009
84	HP	85666B	Spectrum Analyzer	March 14, 2009
83	HP	8566B	Spectrum Analyzer Display	NCR
1530	Miteq	None	Microwave Preamplifier (preamp 2)	June 30, 2009
C030	None	None	Coaxial Cable (MRE band)	June 30, 2009

FIGURE 1: Radiated Emissions Test Setup



APPENDIX A

EMISSIONS DATA SHEET

Radiated Data Sheet
Fundamental
Fountain People, Inc.
Wireless Activator

MEASUREMENT DISTANCE (m): 3

DATE: December 12, 2008

DETECTOR FUNCTION: Peak

PROJECT #: 09166-10

RBW: CISPR 120 kHz

VBW: 1 MHz

Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
915	320	1	64.7	0.0	23.4	5.3	93.4	94	-0.6

Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
915	204	1.3	54.6	0.0	23.4	5.3	83.3	94	-10.7

Note: Prescan performed at 10 meters. Final compliance data taken at 3 meters.

Radiated Data Sheet
Spurious/Harmonics <1 Ghz
Fountain People, Inc.
Wireless Activator

MEASUREMENT DISTANCE (m): 3

DATE: December 12, 2008

DETECTOR FUNCTION: Peak

PROJECT #: 09166-10

RBW: CISPR 120 kHz

VBW: 1 MHz

Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
100	Noise	Floor	35.1	25.4	9.0	1.0	19.6	43.5	-23.9
200	Noise	Floor	38.7	36.0	10.9	1.9	15.5	43.5	-28.0
300	Noise	Floor	34	36.5	13.9	2.5	13.9	46	-32.1
400	Noise	Floor	32.8	36.6	16.6	3.0	15.8	46	-30.2
500	Noise	Floor	32.3	36.6	18.9	3.4	17.9	46	-28.1
600	Noise	Floor	32.5	36.6	19.7	3.7	19.4	46	-26.6

Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
100	Noise	Floor	35.1	25.4	9.0	1.0	19.6	43.5	-23.9
200	Noise	Floor	38.7	36.0	10.9	1.9	15.5	43.5	-28.0
300	Noise	Floor	34	36.5	13.9	2.5	13.9	46	-32.1
400	Noise	Floor	32.8	36.6	16.6	3.0	15.8	46	-30.2
500	Noise	Floor	32.3	36.6	18.9	3.4	17.9	46	-28.1
600	Noise	Floor	32.5	36.6	19.7	3.7	19.4	46	-26.6

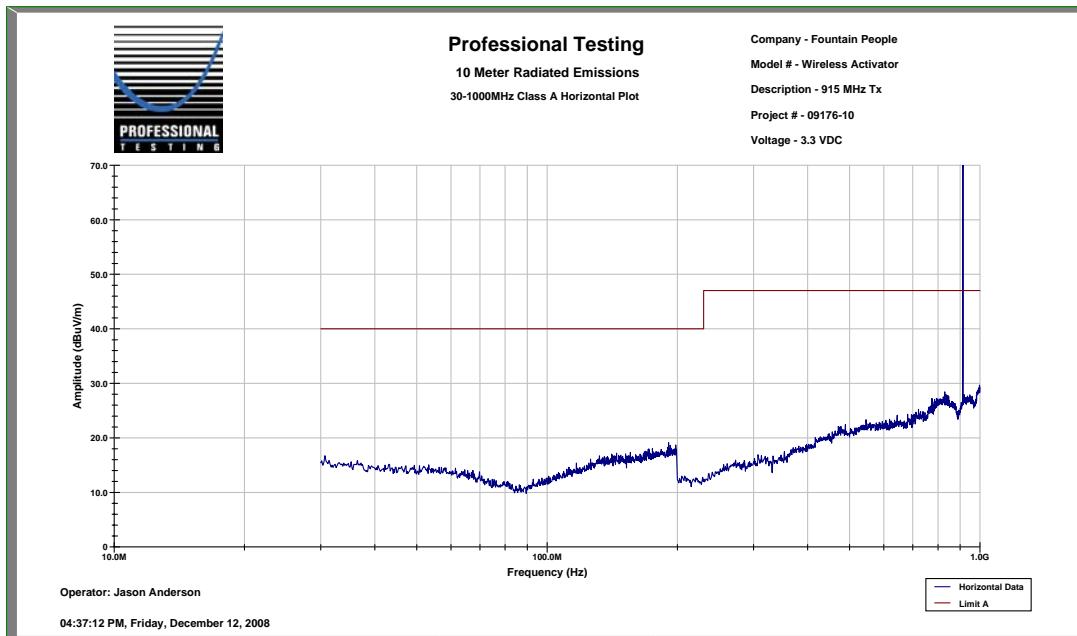
Note: Prescan performed at 10 meters. Final compliance data taken at 3 meters.

Radiated Data Sheet
Spurious Emissions Prescan
Fountain People, Inc.
Wireless Activator

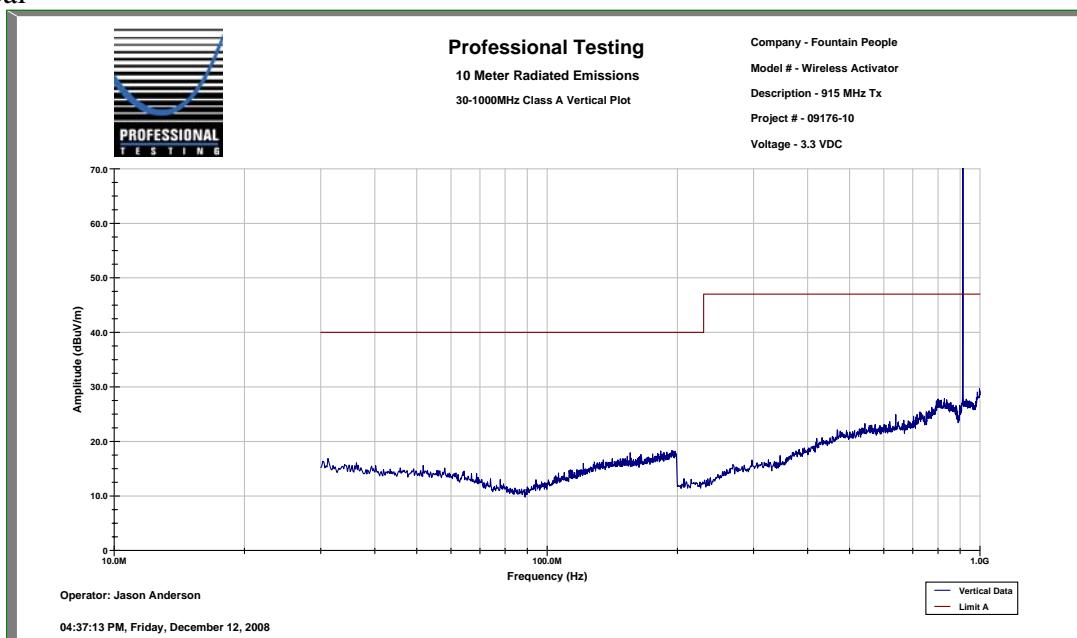
MEASUREMENT DISTANCE (m): 10
 DETECTOR FUNCTION: Peak
 RBW: CISPR 120 kHz
 VBW: 1 MHz

DATE: December 12, 2008
 PROJECT #: 09166-10

Horizontal



Vertical



Radiated Data Sheet
Spurious/Harmonics >1 GHz
Fountain People, Inc.
Wireless Activator

MEASUREMENT DISTANCE (m): 1
DETECTOR FUNCTION: Peak
RBW: 1 MHz
VBW: 1 MHz

DATE: December 12, 2008
PROJECT #: 09166-10

Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
1.83	180	1	71.2	40.2	27.6	2.9	61.5	63.5	-2.0	peak
2.745	180	1	63.9	40.6	29.6	3.0	55.9	63.5	-7.6	peak
3.66	noise	floor	47.9	40.7	32.3	3.3	42.7	63.5	-20.8	peak
4.575	noise	floor	48.8	41.5	33.9	3.9	45.1	63.5	-18.4	peak
5.49	noise	floor	49.1	42.3	34.8	4.7	46.3	63.5	-17.2	peak
6.405	noise	floor	48.8	42.9	35.9	4.5	46.2	63.5	-17.3	peak
7.32	noise	floor	48.8	42.5	37.3	5.1	48.7	63.5	-14.8	peak
8.235	noise	floor	47.9	41.4	38.4	5.0	49.9	63.5	-13.6	peak
9.15	noise	floor	47.4	40.5	38.0	4.9	49.8	63.5	-13.7	peak

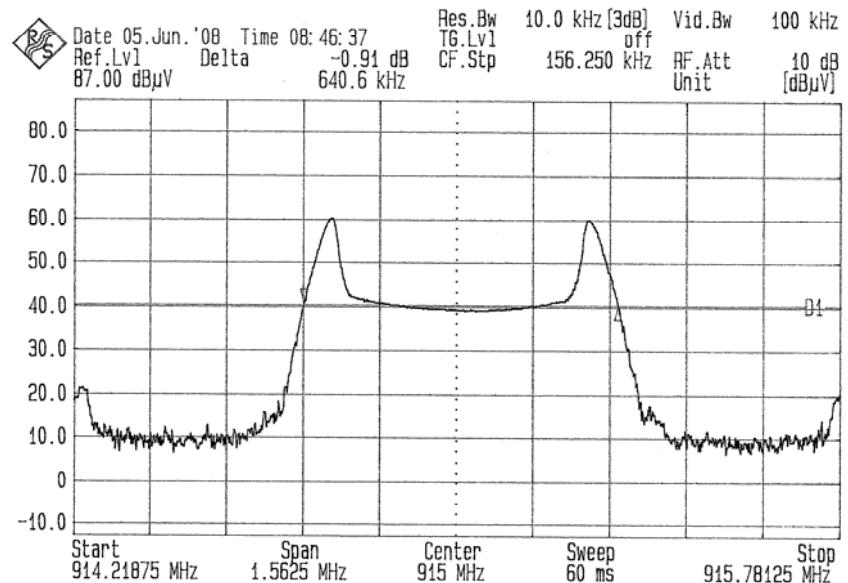
Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
1.83	270	1	59.4	40.2	27.6	2.9	49.7	63.5	-13.8	peak
2.745	360	1	63.9	40.6	29.6	3.0	55.9	63.5	-7.6	peak
3.66	noise	floor	47.9	40.7	32.3	3.3	42.7	63.5	-20.8	peak
4.575	noise	floor	48.8	41.5	33.9	3.9	45.1	63.5	-18.4	peak
5.49	noise	floor	49.1	42.3	34.8	4.7	46.3	63.5	-17.2	peak
6.405	noise	floor	48.8	42.9	35.9	4.5	46.2	63.5	-17.3	peak
7.32	noise	floor	48.8	42.5	37.3	5.1	48.7	63.5	-14.8	peak
8.235	noise	floor	47.9	41.4	38.4	5.0	49.9	63.5	-13.6	peak
9.15	noise	floor	47.4	40.5	38.0	4.9	49.8	63.5	-13.7	peak

Occupied Bandwidth Datasheet
Fountain People, Inc.
Wireless Activator

Test Date: December 12, 2008

20 dB Bandwidth



26 dB Bandwidth

